Model Number

OBR50M-R300-2P1-V1

Retroreflective sensor

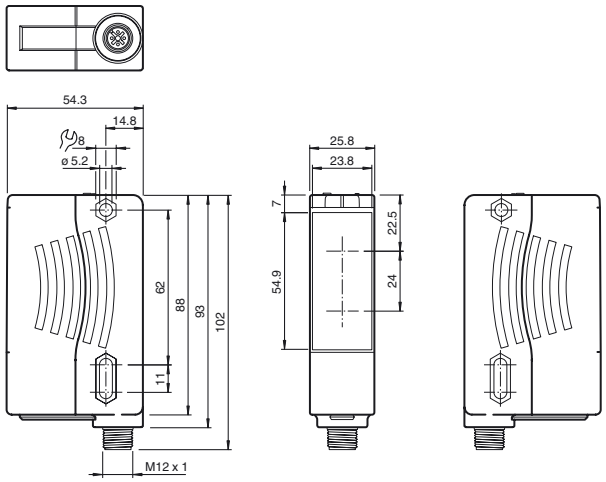
Features

- Pulse Ranging Technology (PRT)
- Optimized for use with fixed reflectors
- Good alignability due to red transmission LED
- Reliable detection of reflecting metall objects
- Simple operation with only one TEACH-IN button

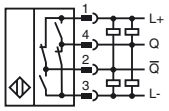
Product information

The sensors in the R300 series represent a versatile product line and adopt various functional principles. All sensors operate using proven Pulse Ranging Technology (PRT) and are characterized by high sensing ranges and detection ranges. Contained within the compact housing of the 28 series of light barriers, the R300 offers all of the properties of PRT such as maximum reliability when detecting objects and immunity against ambient light and cross-talk. To achieve this, the sensors in the R300 series make use of a number of different kinds of measurement data. What's more, the sensors are equipped with red light that is safe for the human eye as standard, making it easier to align the devices, even across expansive work areas. These features, combined with an innovative and intuitive operating concept, provide solutions for conventional automation tasks delivering the highest level of performance.

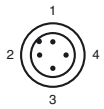
Dimensions



Electrical connection



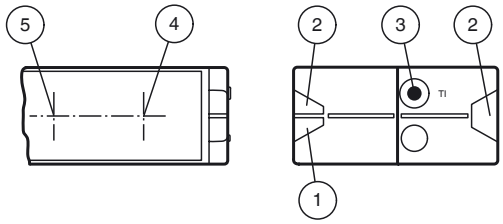
Pinout



Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Indicators/operating means



1	Operating indicator	Green
2	Signal indicator	Yellow
3	Teach-in button	
4	Transmitter	
5	Receiver	

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Technical data

General specifications		
Effective detection range		0 ... 50 m
Reflector distance		0.2 ... 50 m
Reference target		3 x REF-H100
Light source		LED
Light type		modulated visible red light
LED risk group labelling		exempt group
Angle deviation		max. ± 2°
Measuring method		Pulse Ranging Technology (PRT)
Diameter of the light spot		approx. 16 cm x 18 cm at a distance of 10 m
Ambient light limit		50000 Lux
Window width		100 mm
Functional safety related parameters		
$MTTF_d$		100 a
Mission Time (T_M)		10 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED green
Function indicator		2 LEDs yellow for switching state
Control elements		Teach-In key
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC
Ripple		10 % within the supply tolerance
No-load supply current	I_0	≤ 80 mA / 24 V DC
Time delay before availability	t_v	< 0.7 s , for temperatures <-30°C compliance of the specification 5 mins after power on
Output		
Switching type		Q - Pin4: NPN normally closed / light-on, PNP normally open / dark-on /Q - Pin2: NPN normally open / dark-on, PNP normally closed / light-on
Signal output		2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected
Switching voltage		max. 30 V DC
Switching current		max. 100 mA
Switching frequency	f	50 Hz
Response time		5 ms
Conformity		
Product standard		EN 60947-5-2
Ambient conditions		
Ambient temperature		-40 ... 55 °C (-40 ... 131 °F)
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Housing width		25.8 mm
Housing height		88 mm
Housing depth		54.3 mm
Degree of protection		IP67
Connection		4-pin, M12 x 1 connector
Material		
Housing		Plastic ABS
Optical face		PMMA
Mass		90 g
Approvals and certificates		
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1

Accessories

OMH-05
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

OMH-07-01
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

OMH-21
Mounting bracket

OMH-22
Mounting bracket

OMH-VDM28-01
Metal enclosure for inserting protective panes or apertures

OMH-VDM28-02
Mounting and fine adjustment device for sensors from the 28 series

OMH-RLK29-HW
Mounting bracket for rear wall mounting

OMH-K01
dove tail mounting clamp

OMH-K03
dove tail mounting clamp

V1-W-2M-PUR
Female cordset, M12, 4-pin, PUR cable

V1-G-2M-PUR
Female cordset, M12, 4-pin, PUR cable

Other suitable accessories can be found at www.pepperl-fuchs.com

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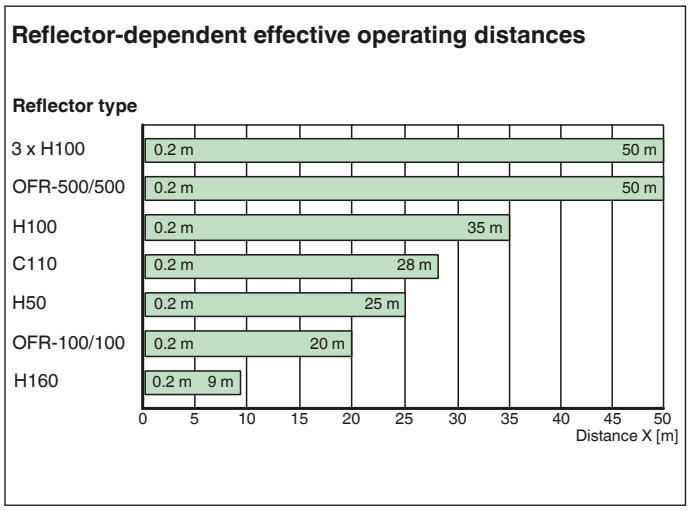
Curves/Diagrams



Intended Use

Mounting instructions:

The sensor can be mounted directly by means of thru-holes or by using a fixing bracket or mounting clamp (not included in the scope of delivery). Ensure that the surface is level in order to prevent the housing from becoming distorted when the fittings are tightened. It is advisable to secure the nuts and screws to prevent the sensor from being misaligned.

Connection:

Connect the device as set out in the connection diagram.

Adjustment:

The green LED lights up when the operating voltage is applied.
Adjust the sensor so that the light spot is on the center of the reflector.
The yellow sensor LEDs light up.

Installation Note

A pressure equalization membrane is fitted on the sensor nameplate.
When mounting, make sure that the pressure equalization membrane is not sealed off.

Operating Concept

Teach-in:

To ensure reliable functionality, save the position of the reflector by using the Teach-in procedure.
Press the "TI" button (for approx. 2 s) until the yellow and green LEDs flash in phase.
Teach-in begins once the "TI" button is released.

Successful Teach-in: Yellow and green LEDs flash alternately (2.5 Hz). After successful Teach-in, the output and LED change their status.

Unsuccessful Teach-in: Yellow and green LEDs flash alternately very quickly (8 Hz). After an unsuccessful Teach-in, the sensor continues to operate with the previous valid setting after the relevant visual fault signal is issued.

Every taught-in reflector position can be retaught (overwritten) by pressing the "TI" button again.

Deleting the Taught-in Reflector Position:

To delete a taught-in reflector position, press and hold the "TI" button for > 4 s until the yellow and green LEDs go out. Release the "TI" button. The saved reflector position is deleted. The yellow and green lights will flash alternately (2.5 Hz) to confirm that the deletion has occurred.

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